Remarks Prepared for the Antitrust Modernization Commission's Economists' Roundtable on Merger Enforcement¹

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Summary

Entry considerations in principle play an important role in horizontal merger analyses. Today, for example, merging parties can alleviate anticompetitive concerns by showing that entry would be likely, timely and significant in response to higher prices. Not too surprisingly, there is considerable agreement that entry defenses are conceptually and logically sensible. While there is agreement on the principles, there is less agreement among authorities, legal and economic scholars, and practitioners as to how to determine whether entry will be likely. Disagreements can arise because Section 3 is ambiguous about what evidence is required to confirm entry is likely, timely and substantial. The Guidelines further concede: "... precise and detailed information may be difficult or impossible to obtain. In such instances, the Agency will rely on *all available* evidence bearing on whether entry will satisfy *the conditions* of timeliness, likelihood and sufficiency." I use the *FTC v. Staples-Office Dep*ot case to illustrate contrasts between the economic logic of Section 3 and what may be possible practice.

¹ Preliminary and incomplete draft. This draft is not for general circulation or citation without the author's express permission.

I. Introduction

Current U.S. merger policy allows horizontal mergers in concentrated markets if authorities believe that future entry would forestall post-merger price increases. Entry, however, has not always figured prominently in merger enforcement policy. Forty years ago, horizontal mergers in concentrated industries were routinely challenged. Moreover, the Department of Justice's 1968 Merger Guidelines did not anticipate that the merging parties could use an entry defense. The 1997 Horizontal Merger Guidelines, on the other hand, devote an entire section to the analysis of entry. According to Section 3 of the 1997 Guidelines, entry analyses can obviate concerns about mergers in highly concentrated markets "if entry into the market[s] is so easy that market participants, after the merger, either collectively or unilaterally could not profitably maintain a price increase above premerger levels."²

This change in antitrust policy is the result of parallel evolutions in legal precedent, economic understanding, and other sections of the Guidelines. For instance, beginning with the *General Dynamics* decision in 1974, the Supreme Court ruled that Agency merger policy could not rely solely on market share statistics, but had to consider the "probable future." Subsequent case law elevated the role of entry analyses when considering a market's probable future.³ Coincidentally, during the late 1970s and 1980s, economists began to develop more sophisticated tools for modeling what a market's probable future might look like. Chief among these tools was game theory. Game theoretic models allowed economists to distinguish more clearly between the roles of firm behavior and industry structure in the determination of industry outcomes. Indeed,

² US Department of Justice and Federal Trade Commission 1997 Horizontal Merger Guidelines, Section 3, p. 25.

³ For discussions of case law in this area see: J. Baker, "The Problem with Baker Hughes and Syufy: On the Role of Entry in Merger Analysis," *Antitrust Law Journal*, 1997; J. Baker, "Responding to Developments in Economics and the Courts: Entry in the Merger Guidelines," *Antitrust Law Journal*, 2003; M. Coate and J. Langenfeld, "Entry Under the Merger Guidelines," *The Antitrust Bulletin*, Fall 1993, 557-592; and J. Ordover and J. Baker, "Entry Analysis Under the 1992 Horizontal Merger Guidelines," *Antitrust Law Journal*, 1992, 139-146.

today we find the current Guidelines incorporating such economic language as "sunk costs" and "commitment." Newer empirical models also have incorporated insights from game-theoretic models and increased economists' capabilities for simulating the future.

The evolution of the merger review process has also affected the Guidelines' treatment of potential entrants. Beginning with the 1982 Guidelines, and culminating in the 1992 revision, the Agencies now separately distinguish between "uncommitted" and "committed" entrants. Uncommitted entrants can affect initial market concentration and competitive effects screens, while both types of entrants can figure in detailed Section 3 entry analyses. Section 3 of the 1992 Guidelines also put in place a three-step test for evaluating whether future entry is "easy" enough to obviate competitive concerns. The specific language is: "Entry is that easy if entry would be timely, likely, and sufficient in its magnitude, character and its scope to deter or counteract the competitive effects of concern."

Many economists and practitioners would say that entry safe harbors are economically sensible and add useful flexibility. I concur. While Section 3 entry analyses are conceptually appealing, Section 3 leaves important practical issues unaddressed. For example, practical issues remain as to how authorities should gauge whether entry will be "timely, likely, and sufficient." Resolving these practical issues, either through experience with the merger process or changes to the Guidelines, is important if easy entry is to be given active consideration in merger reviews. Before discussing these practical issues, I will quickly review how economists think about entry and its potential role in horizontal merger analyses.

II. What Does Economics Say About Entry and the Merger Guidelines?

Section 3 analyses of entry ultimately attempt to answer the *prospective* question:

Is entry so easy that post-merger participants could not "collectively or unilaterally ... profitably maintain a price increase above premerger levels[?]".

In the past, economists tended to answer this question by asking whether prospective entrants faced significant "entry barriers." This approach is less favored today, largely because economists have not been able to agree on the definition of an entry barrier. Indeed, Commissioner Carlton has titled one of his recent papers "... Barriers to Entry are Barriers to Understanding" in which he states that debates over entry barrier definitions are a distraction. Carlton argues instead that it is more productive to focus on the lessons of recent game theoretic models, which he claims have brought economists closer to understanding what exogenous industry conditions might make entry "easy."

While it is impossible here to survey all the contributions of game theory to economists' thinking about entry and market concentration, it is useful to outline how economists use game-theoretic models to analyze whether entry would be likely, timely and substantial. Game theory models of entry begin with a list of basic economic primitives or assumptions. Ideally these assumptions are motivated by the realities of the industries and firms under study. Standard game-theoretic assumptions include:⁵

- 1. Assumptions about incumbents' and potential future entrants' products, demands and costs. These specifications potentially allow for exogenous product or cost differences between incumbents and potential entrants.
- Assumptions about the objectives of incumbents and potential entrants, including what profits they would earn if they enter or exit the market.
 Profits include fixed costs that are incurred if the firm produces, recoverable fixed costs should the firm exit, and any additional fixed costs from exiting.

⁴ See, for example, the papers presented in a 2004 American Economics Association Session entitled "When are Sunk Costs Barriers to Entry? Entry Barriers in Economic and Antitrust Analysis." American Economic Review, May 2004, 461-475.

⁵ This list is neither exhaustive nor necessarily representative of all game-theoretic models.

- 3. Assumptions about the time horizons and costliness of actions, including: how quickly prices, capacity, etc. can be changed; how quickly entrants can enter; and, how costly it is for firms to adjust their actions.
- 4. Assumptions about the nature of competitive behavior among incumbents and what entrants believe about that behavior should they decide to enter.

These assumptions serve as starting points for developing theoretical predictions about firm behavior and market structure. Assumptions 1-3 are fairly standard in most economic models. Assumption 4 differentiates game-theoretic models in that it allows the economist to calculate an "equilibrium" – that is, a set of actions for all economic agents that are consistent with the maintained assumptions (e.g., no firm has an incentive to change their price, enter or exit, etc.). The equilibrium (or equilibria) of the game is the theorist's prediction of what would happen. Empiricists sometimes take the theorist's process one step further by first using historical data to estimate the mathematical primitives underlying the theory (e.g. demand curves and cost functions) before they solve for the model's predictions.

As one can see from the above discussion, game-theoretic models may contain many assumptions. Even though it may not be possible to check the reasonableness of all these assumptions, economists find game-theoretic models useful for developing counterfactual models. Such models can be used to contemplate how incumbents and potential entrants would respond to cost changes, mergers, price increases, and so on. They thus can serve as a basis for predicting a market's "probable future." Over the past twenty years, game-theoretic models of entry and market concentration have identified several very influential assumptions and concepts. These include: the extent to which entrants' fixed costs are sunk; the extent of future market uncertainties; entrants' expectations about incumbent behavior; how quickly decisions can be implemented; and, the costliness of changing decisions.

II.1. Sunk Costs and the "Uncommitted Entrants" of Subsection 1.32

Economists now see sunk costs as central to entrants' decisions. Most economists tend to tend to think of sunk costs as non-recoverable fixed costs. That is, they are fixed investment costs that cannot be recouped should a firm cease operations. Examples include capital items that have specific uses (e.g., rail track to a mine) and product-specific investments. More recently, economists have noted that in uncertain environments there can be sunk opportunity costs. These are implicit costs incurred when a firm forecloses future options. While the Guidelines mention "sunk" costs, they do not distinguish between these two types. I will return to this point below.

Economists believe that rational firms will ignore sunk costs in their decision making once the costs are incurred. Potential entrants who have yet to incur these costs, however, will consider the possible future loss of sunk costs when deciding whether to enter. This difference in thinking will tend to make incumbents more "committed" to remaining in a market. That is, the level of (expected) demand needed to keep an incumbent in a market is lower than the level of demand needed to encourage a potential entrant to enter. Another implication of the presence of sunk costs is that incumbents may strategically be able to use them to deter entry. For example, if entrants believe or can be made to believe that incumbents will react quickly to entry by dropping price, then this will make sunk cost investments less attractive and entry therefore less likely.⁸

Influential theoretical work in the early 1980s by Baumol, Panzar and Willig has also shown that the absence of sunk costs can lead to competitive or "contestable" market outcomes even in markets that are highly concentrated. Panzar

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⁶ For example, J. Sutton, *Sunk Costs and Market Structure* (MIT Press, 1991); A. Dixit and R. Pindyck, *Investment Under Uncertainty* (Princeton Univ Press, 1994); and R. Pindyck, "Sunk Costs and Real Options in Antitrust," (NBER Working Paper, 2005).

⁷ Such opportunity costs are explained by real option theories. These theories have close parallels to option pricing models in financial economics. See Pindyck (2005).

⁸ Schmalensee develops a model that illustrates the important point "...sunk costs may discourage entry by lowering expected profits, but if competition is not thereby limited, no antitrust barrier is created." R. Schmalensee, "Sunk Costs and Antitrust Barriers to Entry," American Economic Review, May 2004, 471-475 at 475.

⁹ W. Baumol, J. Panzar and R. Willig, *Contestable Markets and the Theory of Industrial Structure* (Hartcourt, Brace and Jovanovich, 1982).

and Willig showed that if incumbents and entrants had identical fixed and variable costs, and there were no sunk costs, entrants could engage in "hit and run" entry – entering when prices resulted in super-normal profits and exiting when prices hit a breakeven point. In essence, in a contestable market entrants are "uncommitted" market participants who stand ready to supply a market if prices rise above a (competitive) breakeven point. This threat of easy entry keeps incumbents from raising market prices above breakeven levels.

Given Professor Willig's tenure in the Justice Department from 1989-1991, it is perhaps not too surprising that Section 3 of the 1992 Guidelines explicitly recognizes the importance of sunk costs for entrants' decisions, and that the Guidelines also use the terms "committed" and "uncommitted" entrants. ¹⁰ The term "uncommitted" entrants first appears in Subsection 1.32 of the Guidelines. Subsection 1.32 directs that the Agency must identify "uncommitted entrants" as part of its initial determination of what firms should be included in market concentration calculations. "Uncommitted entrants" are potential suppliers (i.e., potential entrants) who could enter a market within a short period of time (one year) without incurring significant sunk costs of entry or facing high costs to exiting the market. The logic for including only "uncommitted" entrants in the initial calculation of concentration follows the logic of the previous paragraph. Even though they are not currently supplying the relevant markets, and thus would normally be excluded from a market concentration calculation and a subsequent competitive effects analysis, their presence affects pre-merger prices. ¹¹

While the basic conceptual logic of Subsection 1.32 makes economic sense, the practical provisions of Subsection 1.32 are a matter of debate. One line of criticism argues that the identification of uncommitted entrants imposes a substantial investigative

¹⁰ Dr. Willig is a Professor of Economics at Princeton University and served as Deputy Assistant Attorney General for Economics in the Antitrust Division of the U.S. Department of Justice from 1989-1991.

¹¹ See also Ordover and Baker, p. 140-1.

¹² Indeed, the announcement for a 2004 FTC Workshop on Merger Enforcement stated "... the Guidelines do not discuss the role of uncommitted entrants in the evaluation of competitive effects nor do they indicate how one assigns shares to uncommitted entrants. The Agencies seek comment on the proper treatment of uncommitted entrants, including the utility of the distinction between uncommitted and committed entrants *in practice*." [Italics mine.] Available at http://www.ftc.gov/opa/2003/12/mwa.pdf.

burden at an initial point in the review process <u>before</u> the Agency has decided whether a more complete review is necessary. These critics argue that is highly unlikely that an uncommitted entrant analysis would ever change an Agency's decision for a further review, and thus such a time-consuming analysis would be an initial distraction. They argue an analysis of uncommitted entrants may as well be part of a more complete review. A second line of criticism worries about specifics. For example: What are the methods and yardsticks that an Agency should use to assess a potential supplier's sunk entry costs? How should market shares be assigned to firms who have yet to enter? Where does the one-year time horizon some from and why is it the same for all industries?

The first of these questions is perhaps the most important. While economists can conceptually define sunk costs, they have a harder time measuring them. Economists currently have two imperfect approaches to measuring sunk investment costs. One is direct accounting. In some cases, prices in new and used asset markets can be compared to estimate non-recoverable asset costs. A second, indirect econometric approach has received substantial interest from academics. This approach uses historical data on entry and exit decisions, and latent-variable econometric models, to recover estimates of the magnitudes of fixed and sunk costs. ¹⁴ Intuitively the approach works as follows: by observing the gap in demand thresholds (e.g., sizes of the market) between which say a third firm enters a market versus a third incumbent exits the market, one can infer the relative magnitude of sunk costs (see Bresnahan and Reiss (1994)). If there were no sunk costs, and all other firm and market conditions were the same, the entry and exit demand thresholds would be the same. For non-negligible sunk costs, the greater the sunk costs, the greater will be the gap between the entry and exit demand thresholds.

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¹³ See for example the participant remarks in the February 18, 2004 DOJ/FTC Merger Enforcement Workshop session on "Uncommitted Entry." Available at http://www.usdoj.gov/atr/public/workshops/mewagenda2.htm.

¹⁴ Bresnahan and Reiss (1991) and others have developed this approach using both static and dynamic models of entrants' behavior. T. Bresnahan and P. Reiss, "Entry and Competition in Concentrated Markets," *Journal of Political Economy*, 977-1002, 1991. See also T. Bresnahan and P. Reiss, "Measuring the Importance of Sunk Costs," Annales D'Économie et de Statistique, No. 31, pp. 183-217, 1994.

The evolution and refinement of these indirect methods for recovering estimates of sunk costs continues today. They are being modified to address the possibility that entry takes time and that entrants may be uncertain about future market conditions. ¹⁵ Allowing for future market uncertainties in principle will allow economists to model the (sunk) opportunity costs an entrant incurs by entering a market today as opposed to some time in the future. In theoretical work, Pindyck (2005) has shown that these opportunity costs associated with the timing of entry can be substantial, particularly in markets where there is great uncertainty about the future. As with sunk investment costs, these sunk opportunity costs may delay or even prevent entry.

While the language of the Guidelines does not appear to preclude the Agencies and the courts from recognizing sunk opportunity costs, it is unclear how in practice they would be recognized. Economic theory suggests that their magnitude depends on the (likely unobserved) volatilities of entrants' uncertainties, the correlation of these uncertainties, and how the uncertainties impact entrants' profits. There also are practical details that the theory has yet to consider. For example, strategic externalities from the presence of other potential entrants could potentially reduce the opportunity cost of early entry.

As I mentioned earlier, economists are trying to develop richer dynamic theoretical models that can measure sunk opportunity costs the strategic importance of sunk investment costs. These dynamic models, however, are unlikely to be used in merger reviews in the near future for at least two practical reasons. First, it is computationally difficult to estimate models that allow for sophisticated strategic behavior on the part of incumbents. Moreover, just as in theoretical models, empirical researchers have to grapple with the problem that the empirical model may make ambiguous predictions (e.g., a market could support two large firms or three smaller ones). Second, it can be difficult to develop dynamic empirical models that adequately

¹⁵ For example, S. Berry, A. Pakes and M. Ostrovsky, "Simple Estimators for the Parameters of Discrete Dynamic Games (with Entry / Exit Examples)," Yale Department of Economics Working Paper, 2003; P. Bajari, L.Benkard and J.Levin, "Estimating Dynamic Models of Imperfect Competition," Stanford Business School Working Paper, 2005; and S. Ryan, "The Costs of Environmental Regulation in a Concentrated Industry, MIT Department of Economics Working Paper, 2005.

capture changes in entrants' beliefs about future uncertainties. Thus, while economists are making progress trying to develop indirect estimates of sunk costs, these methods likely will not become part of Agency or courtroom assessments any time soon.

A second set of ambiguities in Subsection 1.32 have to do with how the Agency should go about identifying uncommitted entrants and assigning them market shares as part of an initial review. The Guidelines state (Subsection 1.322) that the Agency should look to existing producers in other industries and possibly for potential de novo entrants. In both cases, the Agency is to look only at those who could respond within a year.

In the case of de novo entry, it is unclear from the Guidelines how the Agency would determine how many firms would enter, or at what scale they would enter. (The latter issue also arises when gauging suppliers in other industries.) In the case of existing suppliers in other industries, the Guidelines suggest that the Agency should do an analysis of how much capacity these uncommitted entrants *could* contribute to the market. But how should the Agency assign shares? To illustrate a potential ambiguity, suppose that as a result of its "small but significant and non-transitory increase in price" test, the Agency identifies significant outside capacity *could* respond. The problem with including all of this capacity in a concentration calculation is that it could exceed the reduction in output caused by the small increase in price. If it does, and we included all the capacity, we would be implicitly assuming entry could lead to a post-merger price below the pre-merger price, contradicting the Guideline's initial hypothetical. To resolve this issue, the Agency would need some method that would deliver "equilibrium" predictions of the capacity that would respond. ¹⁶

II.2. Sunk Costs and the "Committed Entrants" of Section 3

The Guidelines Section 3 language largely focuses on "committed" entrants. Committed entrants are treated here because the Agency has initially determined the

¹⁶ This discussion of supply does not necessarily extend to the consideration of competitive effects or what would be considered in litigation.

merger raises competitive concerns. According to economic theory then, the Agency should ask whether sunk costs are large enough that they likely will deter competitive entry. Subsection 3.2 spells out the steps the Agency should undertake when considering whether entry is "likely." This subsection directs the Agency (or others) to estimate the costs, demands and likely supply responses of incumbents and potential entrants. In a complete Section 3 analysis, the Agency would have to gauge: the output reduction in response to a small price increase; the potential entrants' likely fixed, sunk and variable costs; the minimum viable scale (MVS) of each entrant; and the amount each entrant would supply.

While the economic logic of Section 3 is consistent with many game-theoretic analyses of how sunk costs affect entry, Section 3 provides relatively little guidance on how these quantities should be estimated. While normally we might expect that such practical issues would be resolved as part of ongoing merger reviews and legal challenges, the quantitative demands of a complete Section 3 analysis make this economist skeptical that such quantitative analyses will be undertaken (unless perhaps the merger is litigated). Moreover, even if entry analyses consistent with Section 3 are carried out, the courts may not have much patience to wade through their likely econometric complexity. In the end, the demands of a complete analysis may lead the Agencies and the courts to base their decisions only on documents and factual testimony. While this is not necessarily bad, there is no guarantee that this process will match the economic logic promulgated in Section 3.

II. 2. A. Section 3 Analyses in Practice

One general lesson that can be drawn from recent empirical models of entry and competition is that detailed data often are needed to recover entry's effects of prices and outputs. A second general lesson is that building realistic models can be a complex and time-consuming process. Indeed, it may be unrealistic to think that they can be developed as part of a one to three month merger investigation.

To appreciate the issues involved and constraints that may impact a Section 3 analysis, it is instructive to consider a specific case: the 1996 petition to merge Staples and Office Depot. After an initial review, the FTC voted to challenge this merger. Both the FTC's initial review and work by Professor Orley Ashenfelter found that the merger would likely elevate the prices of Office Supply Superstores (OSS's). The OSS market at the time of the merger announcement was highly concentrated, with just three national competitors: OfficeMax, Staples and Office Depot. Both Professor Ashenfelter and Professor Jerry Hausman (for Defendants) developed numerous econometric models of prices and revenues. According to Ashenfelter et al. (2004, p. 1) "For the FTC, the econometric effort involved six Ph.D. economists working full time on data analysis for several months, with other economists chipping in."

Two of the econometric analyses undertaken specifically appeared to speak to the likelihood, timing and sufficiency of entry. One "reduced form" approach modeled how cross-section weighted averages of superstore prices varied across markets with one, two or three of the chains' stores. The second examined how revenues implicitly changed in response to entry and exit using fixed effects regression techniques. Both of these approaches were relatively simplistic in that they did not try and explain why a particular market only had one, two or three stores. This type of question has been the focus of more recent models entry and its effects in the academic literature. Moreover, these analyses apparently did not quantitatively measure sunk costs or minimum viable scale for either a new store or a new chain. Indeed, to the extent sunk costs and minimum viable scale were addressed, they were gauged based on documents and testimony.

¹⁷ I was not involved in this case and have not had access to the full trial record. This discussion is based on public accounts of the case, including: FTC v. Staples and Office Depot Decision, Judge Thomas Holmes; J. Baker, "Econometric Analysis in FTC v. Staples," *Journal of Public Policy and Marketing*, (1999); D. Ashmore, J. Baker, S. Gleason and D. Hosken, "Econometric Analysis in Staples," Princeton Department of Economics Working Paper 486, 2004; S. Dalkir and F. Warren-Boulton, "Prices, Market Definition, and the Effects of Merger: Staples-Office Depot," Chapter 2 in J. Kwoka and L. White, eds. *The Antitrust Revolution*, 2004; and C. Newmark, "The Positive Correlation of Price and Concentration in Staples: Market Power or Indivisibility?" Independent Institute Working Paper 31, 2001.

¹⁸ See Reiss and Berry (2005) for a survey.

¹⁹ Dalkir and Warren-Bolton (2004).

As Ashenfelter et al. (2004) and Newmark (2001) describe, the main econometric evidence that shaped the FTC's decision to challenge the merger were data and regressions suggesting weighted averages of OSS prices were higher in more concentrated markets. This correlation, while consistent with the view that increased concentration causes higher prices, was, according to Newmark (2001), not reinforced by econometric analyses of the type contemplated in the Guidelines. That is, they did not ask whether indivisibilities (or sunk costs) made entry easy or difficult in local OSS markets. To the extent that the public record indicates there was an analysis of likely entrants, entry was thought of as requiring a new national chain. According to Cabral (2003), an assessment of what the other main competitor, OfficeMax, would do post-merger does not appear to have figured in the FTC's or Ashenfelter's simulations of post-merger prices. In his own theoretical and simulation work, however, Cabral finds that expansion by non-merging incumbents can have an important disciplining effect on post-merger prices.²⁰

To summarize the discussion to this point, the two sides conducted very detailed and substantial econometric analyses of prices and how they varied with concentration. These analyses do not appear to have dealt directly with the likelihood, timing and sufficiency issues raised in Section 3. Justice Hogan's decision to block the merger largely appears to have ignored the two sides' econometric evidence, and focused instead on documents and testimony. When it came to the question of whether easy entry was likely, Justice Hogan's decision cited the recent exit of national chains as evidence that entry was unlikely. Sunk costs appear to have only received qualitative consideration:

All but Staples, Office Depot, and OfficeMax have either closed or been acquired. The failed office superstore entrants include very large, well-known retail establishments such as Kmart, Montgomery Ward, Ames, and Zayres. A new office superstore would need to open a large number of stores nationally in order to achieve the purchasing and distribution economies of scale enjoyed by the three existing firms. Sunk costs would be extremely high. Economies of scale at the local level, such as in the costs of advertising and distribution, would also be

²⁰ Cabral, however, notes that such effects are sensitive to what is assumed about demand. See his discussion of G. Werden and L. Froeb, "The Entry-Inducing Effects of Horizontal Mergers: an Exploratory Analysis."

difficult for a new superstore entrant to achieve since the three existing firms have saturated many important local markets...

Thus, in the end it appears that the court's consideration of easy entry hinged more on historical information about the evolution of the industry rather than the three-step analytical framework of the Guidelines. Section 3 in fact anticipates such an outcome:

"... precise and detailed information may be difficult or impossible to obtain. In such instances, the Agency will rely on *all available* evidence bearing on whether entry will satisfy *the conditions* of timeliness, likelihood and sufficiency."

III. Conclusion

Merging parties can alleviate anticompetitive concerns by showing that entry would be likely, timely and significant in response to higher prices. Not too surprisingly, there is considerable agreement among economists and practitioners that such a safe harbor is conceptually and logically sensible. While there is agreement on the overarching principle, there is less agreement as to how to determine whether entry will be likely and substantial. The FTC versus Staples-Office Depot litigation illustrates that these practical issues may remain difficult to resolve.